



# GENERA ENERGY

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Delivering Sustainable Biomass Solutions

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## Making Biomass Work

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Murray State University

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# Company Overview

- Privately held biomass supply solutions company based in Vonore, TN
- Bringing an industrial approach and experience to agricultural biomass supply
  - Energy crop production, biomass processing, project management
- The most experienced company in the country producing, handling, and processing a wide variety of biomass feedstocks
  - Purpose grown crops, residues
- Proprietary biomass feedstock processing
- Extensive partners up & down the value chain

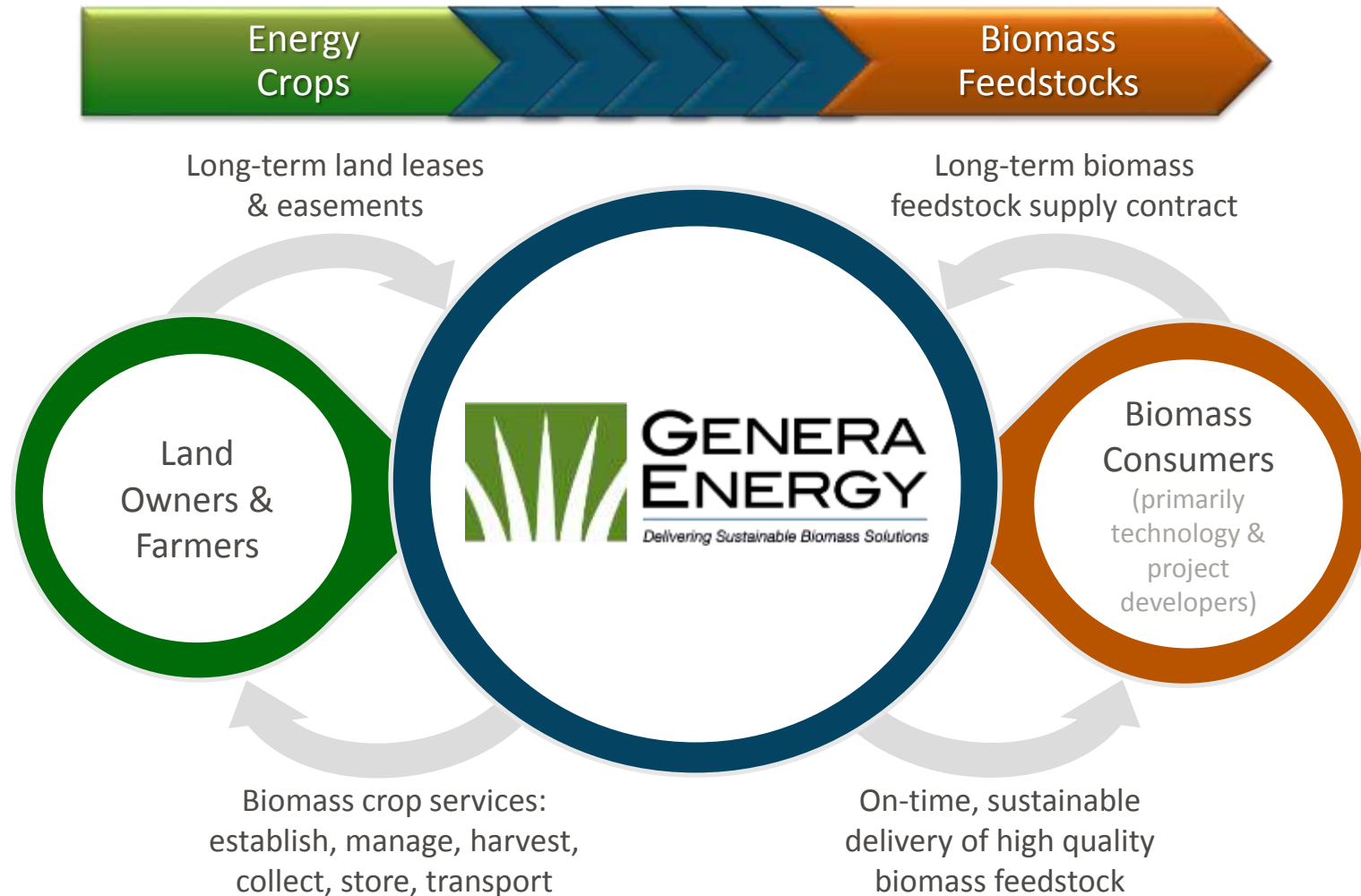


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*Dr. Sam Jackson accepting the 2013 Sustainable Biofuels Award for Sustainable Feedstock Innovation, Awarded at the World Biofuels Markets 2013 Congress & Exhibition, the largest international gathering of its kind.*

# What We Do



*Genera spans the gap between upstream landowners and downstream biomass technology providers and project owners, to sustainably and reliably produce energy crops and add value by tailoring the supply chain to meet the uniform industrial biomass feedstock supply requirements of biomass processes.*

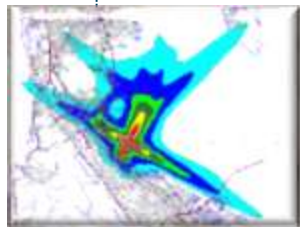
# Genera's Integrated Solution Delivers

## Proprietary GIS Model

## Energy Grange™ Management

## Supply ASSURE™ System

## BIN-SPEC™ Processing



*Data-Rich Feedstock Supply & Cost Model*



*Preferred Input Supplier Network*



*Full Cycle Production & Maintenance*



*Moisture Management & Optimized Location*



*Project-Specific System Design*



*Land Accumulation & Control Model*



*Optimized Planting & Establishment Success*



*Multi-system Cost Analysis & Harvest Scheduling*



*Maintain Quality & Minimize Cost*



*Risk Management & QA/QC*

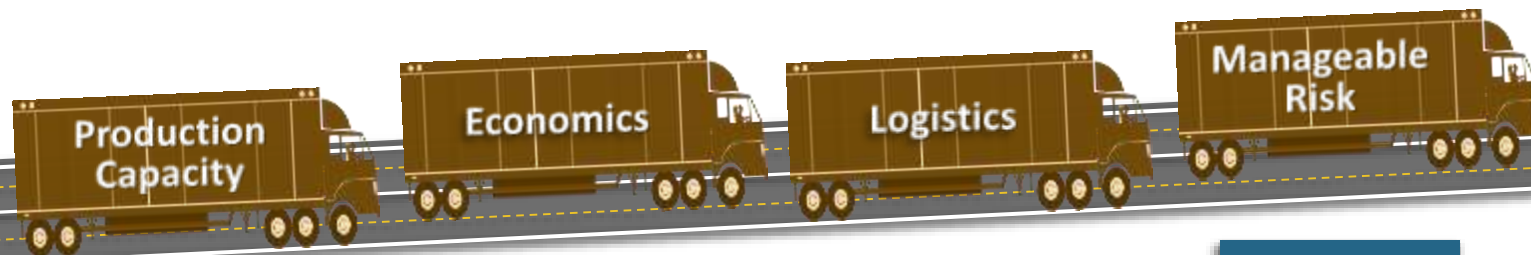
# Marketplace Feedstock Needs

- Sustainable biomass feedstock supply
  - Year round supply of substantial quantities
  - Predictable price that supports project economics
  - High quality, consistent product
  - Positive environmental benefits
- Maximize feedstock value
  - Long term supply commitment
  - Integrated upstream solution
  - Continuous improvement and innovation
- Minimize feedstock risk
  - Portfolio of biomass feedstocks (annuals & perennials)
  - Proven track record
  - Feedstock supply commitment consistent with project timeline
  - Credit worthy supplier





# Driving Forward



## Production Capacity

- Land availability
- Grower involvement

## Economics

- Financing
- Production Costs
- Continuous Improvement

## Logistics

- Density
- Access
- Scale

## Manageable Risk

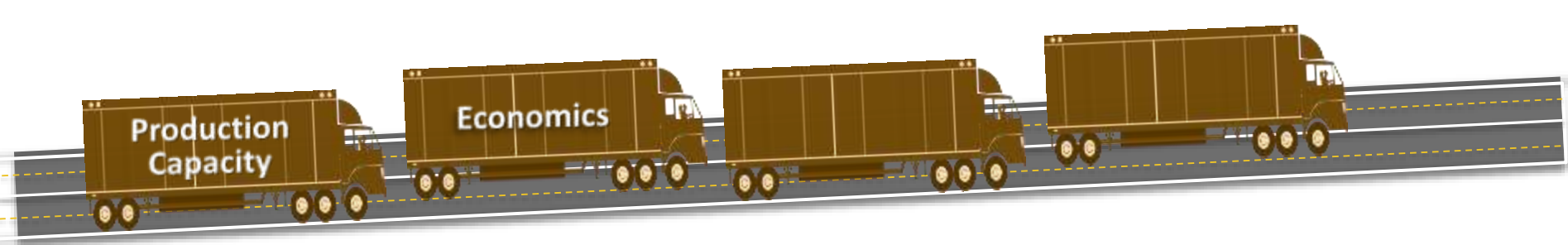
- Multi-feedstock
- Natural variability
- Alternative markets

# Production Capacity



- Land availability
  - Current use
  - Competitive uses
  - Grower attitudes and participation
- Land productivity
  - Soil types
  - Precipitation
  - Crop adaptation

# Production Economics



- Drivers of cost include
  - Land cost and availability
  - Feedstock(s) selection
  - Supply system (just-in-time vs. stored material)
  - Package requirements
  - Transport
  - Pre-processing

All drive to the least-cost feedstock solution!



# Biomass Logistics



- Logistical systems are significant cost components to biomass supply chains
- Feedstock composition & quality can also be significantly impacted by proper logistics, storage and handling of material
- Feedstock logistics revolve around:
  - Bulk density
  - Moisture control
  - Storage and handling
  - Access

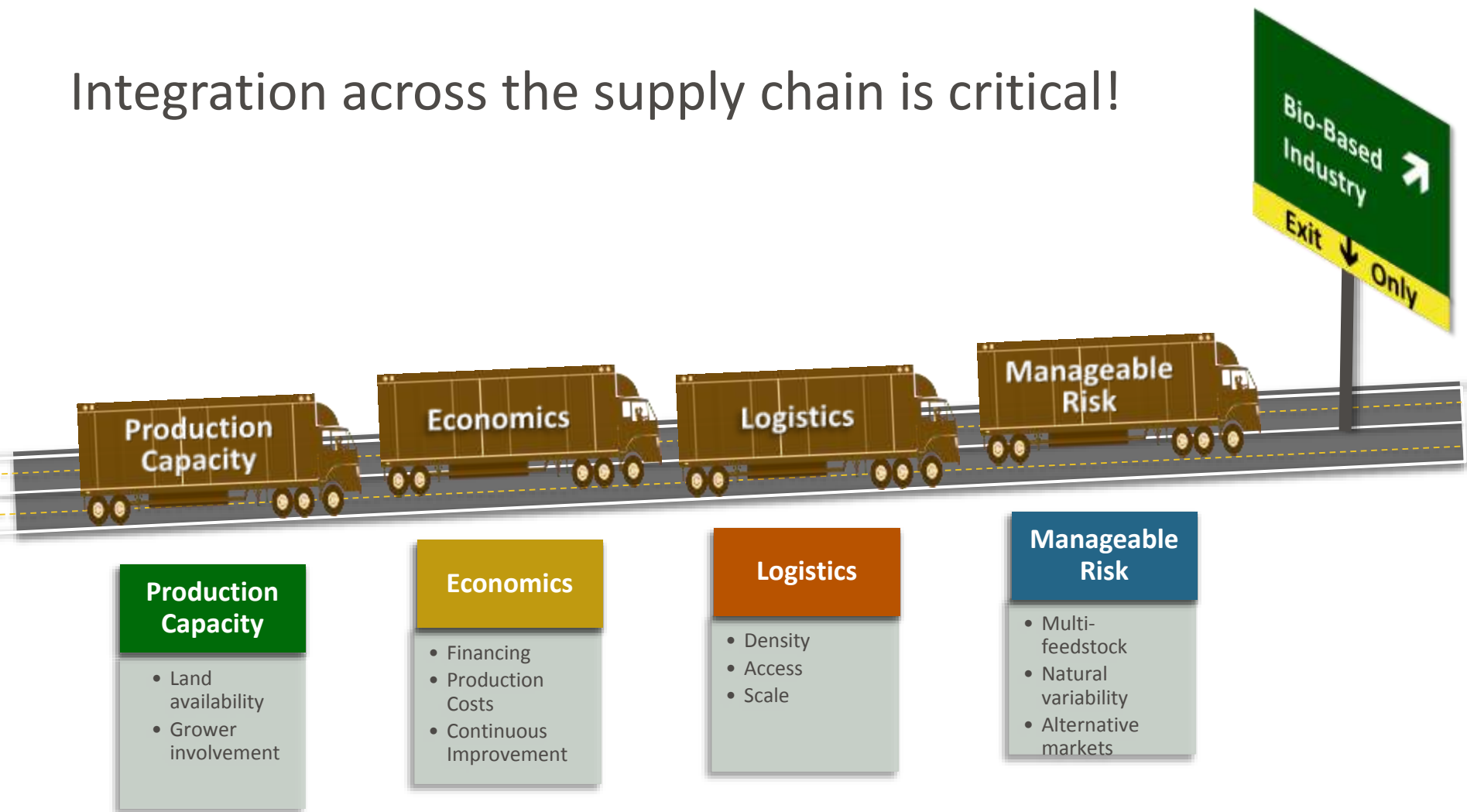
# Managing Risk



- Land acquisition
  - Real grounded information is key (e.g., focus groups)
  - Integrated, long-term land control
- Achieving projected crop yields
  - Weather impacts
  - Management consistency
- Inventory risk
  - Storage degradation
  - Fire, other catastrophic events
- Things beyond our control
  - Commodity price swings
  - Oil costs
  - Policy changes

# Driving Forward

Integration across the supply chain is critical!



# Summary

- Genera provides de-risked, scalable feedstock supply and processing solutions
- Specialized in providing consistent, uniform industrial biomass feedstocks
- Our industry-leading expertise can improve efficiencies and reduce cost in any biomass processing application







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